

Chapter 17

Using Diagnostics

Introduction

Use Metasys Diagnostics to troubleshoot the hardware components of the BAS and to check how efficiently the devices are communicating. Perform diagnostics on the network, on an N1 device (OWS or NCM), or on an N2, L2, S2, N2E, or LONWORKS compatible device (that is, DCM, XRL, DSC8500, or FPU).

Activate Diagnostics from any OWS (PC or portable) remotely or directly connected to an online Network Control Module (NCM).

This chapter describes how to:

- print network diagnostics
- display PC diagnostics
- display NC diagnostics
- perform N2/L2/S2 diagnostics
- update statistics
- clear statistics
- print diagnostics

Key Concepts

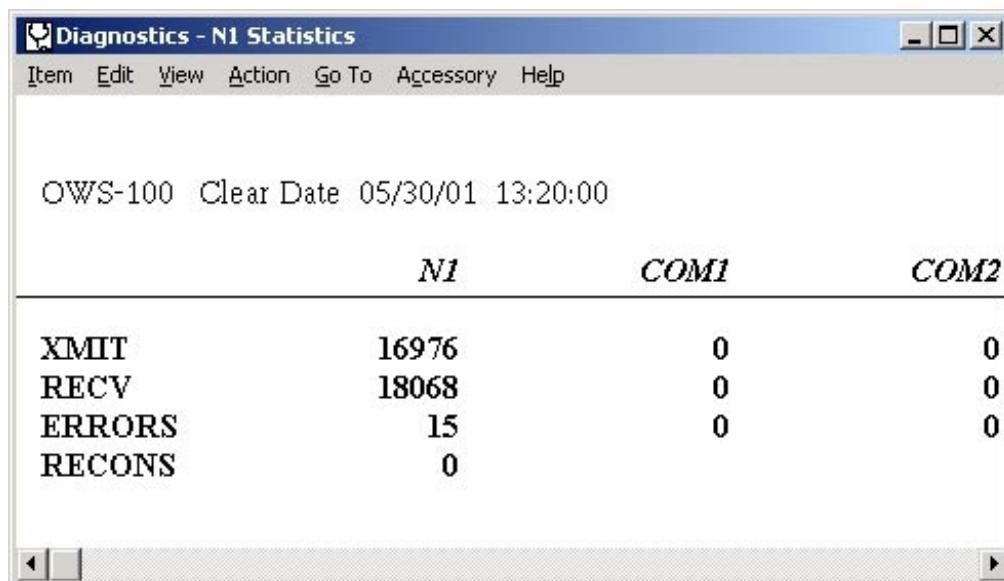
Network Diagnostics

The Network Diagnostics option prints detailed information about the hardware configuration and addressing of the entire network. The PC can only print Network Diagnostic information; it cannot display this information on the screen.

The printout of Network Diagnostics includes listings of all connected OWSs, NCMs, N2/L2/S2/N2E/LONWORKS compatible devices, and all software objects connected to each N2/L2/S2/N2E/LONWORKS compatible device.

PC Diagnostics

The PC Diagnostics option displays N1 statistics collected at the selected OWS (not all N1 traffic). This information appears in the Diagnostics-N1 Statistics window. Figure 17-1 shows an example of this window.



The screenshot shows a Windows-style application window titled "Diagnostics - N1 Statistics". The menu bar includes "Item", "Edit", "View", "Action", "Go To", "Accessory", and "Help". The main window displays network statistics for an OWS-100. The text "OWS-100 Clear Date 05/30/01 13:20:00" is shown. A table follows, with columns labeled "N1", "COM1", and "COM2". The data is as follows:

	<i>N1</i>	<i>COM1</i>	<i>COM2</i>
XMIT	16976	0	0
RECV	18068	0	0
ERRORS	15	0	0
RECONS	0		

Figure 17-1: Diagnostics-N1 Statistics

Table 17-1 details the type of information found in each of the fields of the Diagnostics-N1 Statistics window.

Table 17-1: Diagnostics-N1 Statistics Window Fields

Field	Description
XMIT	The number of communications transmitted over the N1 Direct and RS-232 communication ports (COM1, COM2, COM3, and COM4) since the last time statistics were cleared. These statistics are collected when a PC or portable terminal uses these ports for a dial-up connection to an NCM. If a printer or mouse is connected to the COM1 port, the COM1 transmits are not included.
RECV	The number of communications received since the last time statistics were cleared
ERRORS	The number of abnormal conditions received over the N1 Direct and RS-232 communication ports (COM1, COM2, COM3, and COM4) since the last time statistics were cleared.
RECONS	The total number of reconfigurations since the last time the statistics were cleared. A reconfiguration automatically occurs whenever a node is added to or deleted from the N1 LAN, or changes from offline to online.

NC Diagnostics

There are eight NC Diagnostics options, all described below.

Reset NC

If the NCM has already been downloaded, this option warm starts the NCM. If the NCM has not been downloaded, this option cold starts the NCM. The cold start induces a download of BAS code and databases. BAS code consists of Metasys executable files. The databases include system\object records, control processes, and feature information. Both warm and cold resets activate a series of internal self-tests, and the NCM goes offline until the self-tests are complete.

Reload NC

Cold starts the NCM. The cold start induces a download of BAS code and databases.

NOVRAM View

When you choose this option, a dialog box appears indicating that the function has been moved to WNCSETUP.EXE. Use WNCSETUP to see or modify NOVRAM information for the selected NCM. See the *NCSETUP for Windows Technical Bulletin (LIT-6360251d)* for more information.

N1 Statistics

The N1 Statistics window that appears for NC diagnostics is identical to the PC Diagnostics window (Figure 17-1). See Table 17-1 for a description of the fields in this window.

N2/L2/S2 Statistics

If more than one trunk is defined, NC/L2/S2 Statistics displays a second dialog box for selecting N2/L2/S2 Trunk 1, Trunk 2, or both. Select a trunk and click OK. The N2 Statistics window appears (Figure 17-2).

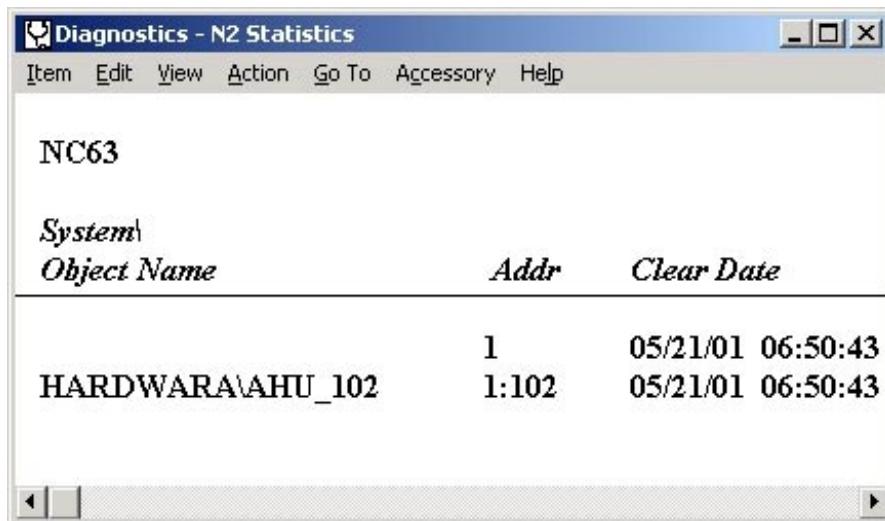


Figure 17-2: N2/L2/S2 Statistics Window

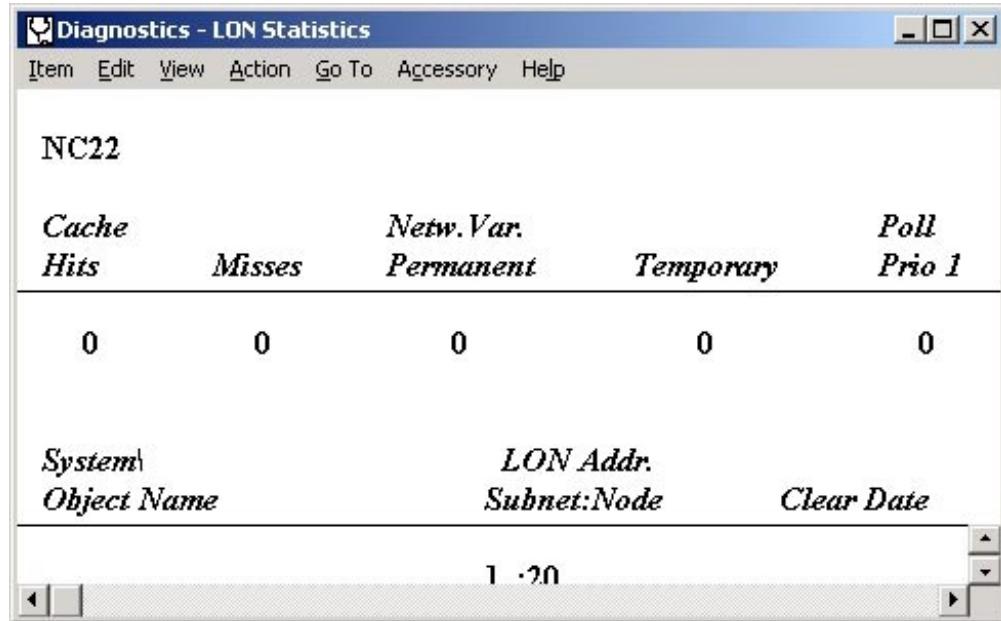
Table 17-2 describes the information presented in the N2 Statistics window fields. The first line displays trunk totals rather than data specific to one device. For example, the Polls column in the first line displays the total number of polls from the NCM to all devices on the trunk.

Table 17-2: N2 Statistics Window Fields

Field	Description
System\ Object Name	System\object name of the device connected to the trunk. For the trunk totals line (the first line), this field is blank
N2 Address	Address of the device on the trunk. For the trunk totals line, only the trunk number appears
Clear Date	Date and time that N2 statistics were last cleared for the device
Polls	Number of polls from the NCM to the hardware device since the last time statistics were cleared
Commands	Number of requests from the NCM to the device since the last time statistics were cleared
Off Polls	Total number of offline polls from the NCM to the hardware device since the last time statistics were cleared
Retries	Total number of times the NCM retried communications since the last time statistics were cleared
Err Response	Total number of errors received

LonWORKS Statistics

Figure 17-3 shows the Diagnostics-LON Statistics window, which displays diagnostics information for LONWORKS devices connected to the selected NCM.



The screenshot shows a Windows-style application window titled "Diagnostics - LON Statistics". The menu bar includes "Item", "Edit", "View", "Action", "Go To", "Accessory", and "Help". The title bar has standard window controls. The main area displays statistics for a device named "NC22".

<i>Cache</i>		<i>Netw. Var.</i>		<i>Poll</i>
<i>Hits</i>	<i>Misses</i>	<i>Permanent</i>	<i>Temporary</i>	<i>Prio 1</i>
0	0	0	0	0

Below this, there is a table with columns for "System\ Object Name", "LON Addr.", "Subnet:Node", and "Clear Date". The "Clear Date" column contains the value "1-20".

<i>System\ Object Name</i>	<i>LON Addr.</i>	<i>Subnet:Node</i>	<i>Clear Date</i>
			1-20

Figure 17-3: Diagnostics-LON Statistics Window

Table 17-3 describes the fields in the Diagnostics-LON Statistics window.

Table 17-3: LON Statistics Window Fields

Field Name	Description
System\ Object Name	System\object name of the device
LON Addr, Subnet:Node	Address of the device on the trunk. For the trunk totals line, only the trunk number appears.
Clear Date	Date and time that LonWORKS statistics were last cleared for the device
Polls	Number of polls from the NCM to the hardware device since the last time statistics were cleared
Cmnds	Number of requests from the NCM to the device since the last time statistics were cleared
Offl. Polls	Total number of offline polls from the NCM to the hardware device since the last time statistics were cleared
Prog. ID	8 bytes of information identifying the device's firmware version. May be either an ASCII string or a special format containing manufacturer and device information as defined by the LONMARK interoperability guidelines
Neuron® ID	Unique 48-bit address embedded in the device's Neuron chip
Cache Hits	Number of times the NCM has found a Network Variable (NV) value in the poll image cache
Cache Misses	Number of times the NCM has polled a device to find an NV value
Netw. Var. Permanent	Number of permanent NVs (mapped BI or MSI software objects, or AI objects with Alarm limits) in the poll image
Netw. Var. Temporary	Number of temporary NVs in the poll image (AI's without Alarm limits defined). These are deleted when their time-to-live is up. See the <i>NCSetup for Windows Technical Bulletin (LIT-6360251d)</i> for details on how to define the time-to-live.
Poll Cycle Time (*50 ms) Prio 1, 2, and 3	Amount of time it took to poll the NVs of each priority. Multiply the displayed value by 50 milliseconds.

Task/Error Log

The Diagnostics-NC Task Error Log window (Figure 17-4) contains the contents of the NCM's detected runtime errors.

Date/Time	Error	Arg	Task	Err
05/29/01 13:50:41	551	10	41	1
05/29/01 13:50:41	552	512	41	1
05/29/01 13:51:03	550	10	41	1
05/29/01 14:05:00	553	10	40	1
05/29/01 15:05:00	553	10	40	1
05/29/01 16:05:00	553	10	40	1
05/29/01 17:05:00	553	10	40	1
05/29/01 18:05:00	553	10	40	1

Figure 17-4: NC Task Error Log Window

This window displays the date and time of the error, the error number, error data, and the text associated with the error. For more information on the NC Task Error Log window, see the *Troubleshooting Guide Technical Bulletin (LIT-636328)*.

NCM Miscellaneous Data

The Diagnostics-NCM Miscellaneous Data window (Figure 17-5) displays information for the selected NC, including:

- NCM type and NIM (if the NCM is an NCM200)
- EPROM and DRAM release
- NC current state
- NCM runtime in days (This is the number of days since the NCM was *first* powered up, not reloaded.)
- current NCM allocable and acquired memory usage. (The NCM uses allocable memory to hold the database. Acquired memory is the memory that the features temporarily use.)
- startup diagnostic results

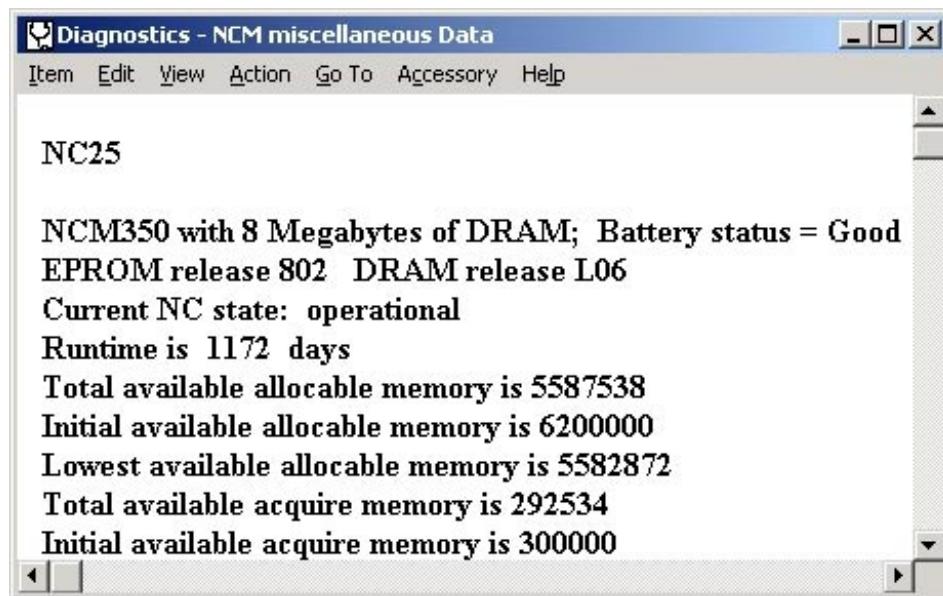


Figure 17-5: NCM Miscellaneous Data Window

N2/L2/S2 Device Diagnostics Options

There are two N2/L2/S2 diagnostics options: Reset and Statistics. These options function differently for each type of device: DCM, XM, LC (ILC), FPU, or DSC.

Table 17-4 describes how the two options function for each device.

Table 17-4: N2/L2/S2 Diagnostics Options

Type of Diagnostics	Description
DCM Diagnostics	Reset: If the NCM reads a changed version number from the DCM, the DCM is downloaded. The DCM sanity test is performed. The DCM goes offline during the test, but returns online after the test is complete. N2 Statistics: Displays the following N2 Statistics window for the trunk and device number of the selected DCM. This summary is the same as the N2/L2/S2 Diagnostic window shown previously, except that it displays N2 statistics for the selected DCM only (rather than for all devices on the trunk).*
XM Diagnostics	Reset: No download occurs. The XM sanity test is performed. The XM goes offline during the test, but returns online when the test is complete. N2 Statistics: Displays the N2 statistics for the trunk and device number of the selected XM. This summary is the same as the one displayed N2 Statistics window, except that it displays N2 statistics for the selected XM only.*
ILC Diagnostics	Reset: The ILC goes offline, comes back online, and is downloaded. The current status of the outputs is frozen until the download is complete. N2 Statistics: Displays the N2 statistics for the trunk and device number of the selected ILC. This summary is the same as the one displayed in N2 Statistics window, except that it displays N2 statistics for the selected ILC only.*
DSC Diagnostics	Reset: The C210A or C260A goes offline and returns online after a few seconds. The CS forces a download to the C210A or C260A when it returns online. The adjust value for Priority 2 and override value are downloaded. No internal test occurs. L2 Statistics: Displays the L2 statistics for the trunk and device number of the selected C210A or C260A. This summary is the same as the one displayed in the N2/L2/S2 Statistics window, except that it displays L2 statistics for the selected DSC only.*
DSC8500 and FPU Diagnostics	Reset: DSC8500 and FPU devices do not have reset capabilities. S2 Statistics: Displays the S2 statistics for the trunk and device number of the selected DSC8500 or FPU. This summary is the same as the one displayed in the N2 Statistics window on the previous page, except that it displays S2 statistics for the selected S2 device only.*
ASC Diagnostics	Reset: The AHU, UNT, or VAV goes offline, comes back online, and is downloaded. The current status of the outputs is frozen until the download is complete. DC/DR and LCPs do not have reset capabilities. N2 Statistics: Displays the N2 statistics for the trunk and device number of the selected ASC. This summary is the same as the one displayed in the N2 Statistics window, except that it displays N2 statistics for the selected ASC only.*
D600 Diagnostics	Reset: D600 devices have no reset capabilities. N2 Statistics: Displays the N2 statistics for the trunk and device number of the selected D600 Access Controller. This summary is the same as the one displayed in the N2 Statistics window, except that it displays N2 statistics for the selected D600 only.*

* For a description of the fields in the Statistics window, see *Diagnostics- N1 Statistics Window Fields* earlier in this chapter.

Detailed Procedures

Printing Network Diagnostics

To print network diagnostics:

1. Select the name of the network on the map.
2. On the Action menu, click Diagnostic. The Network Diagnostics dialog box appears (Figure 17-6).

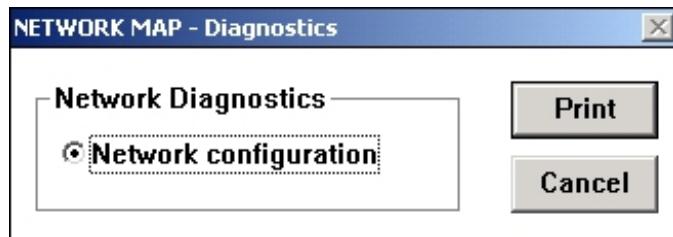


Figure 17-6: Network Diagnostics Dialog Box

3. Click OK to send the diagnostics to the currently active printer. (Specify the active printer with the Change Printer option on the Item menu.)

Displaying PC Diagnostics

To display PC diagnostics:

1. From the Network Map, select an OWS to use to perform diagnostics.
2. On the Action menu, select Diagnostic. The following PC Diagnostics dialog box appears (Figure 17-7).

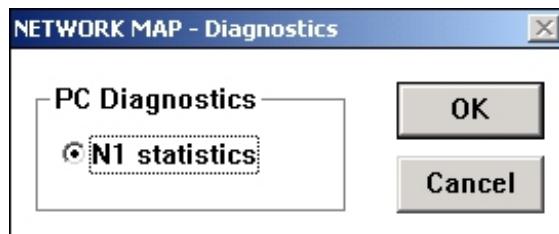


Figure 17-7: PC Diagnostics Dialog Box

3. Click OK. The Diagnostics-N1 Statistics window appears.

Displaying NC Diagnostics

To display NC diagnostics:

1. Double-click on the Devices PC group to display the Devices Focus window. The Devices Focus window appears.
2. Select an NCM. (The NCM must be online.)
3. On the Action menu, click Diagnostics. The NC Diagnostics dialog box appears (Figure 17-8).

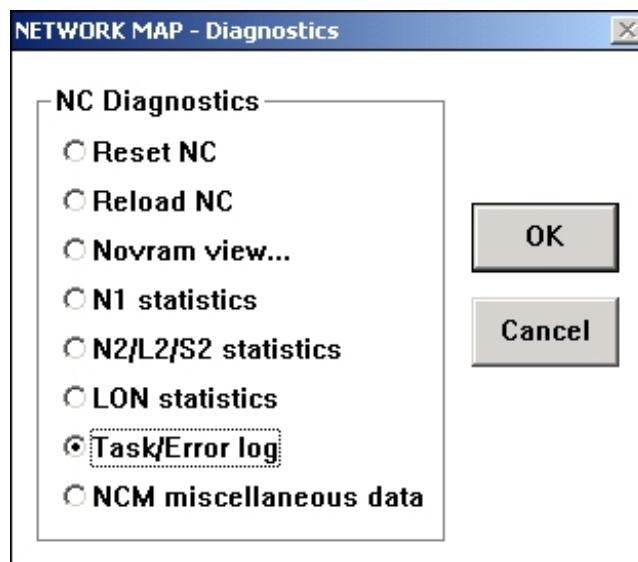


Figure 17-8: Network Map-Diagnostics Dialog Box

4. Select one of the options and click OK.

Performing N2/L2/S2 Diagnostics

To perform N2, L2, or S2 diagnostics:

1. Display any summary (for example, System, Offline, Critical) containing the device.
2. Select the N2, L2, or S2 hardware device.
3. On the Action menu, click Diagnostics. The Diagnostics dialog box appears. The heading of the box varies according to the type of device selected in Step 2. The dialog box shown in Figure 17-9 appears for a DCM.

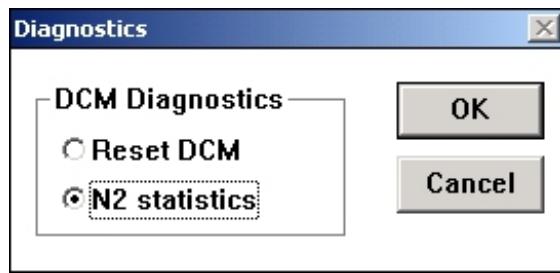


Figure 17-9: N2/L2/S2 Device Diagnostics Dialog Box

4. Select the type of diagnostics (Reset or N2/L2/S2 Statistics) to perform by clicking the option button. Refer to Table 17-4 for a list of available diagnostics options.
5. Click OK.

Updating Statistics

To update the statistics displayed on the current screen, click Reread Statistics on the Action menu. (The NC Task/Error Log Action menu displays Reread Log.)

Clearing Statistics

To clear the statistics to 0, click Clear Statistics on the Action menu. The Diagnostics feature continues to collect data starting from 0. (The NC Task/Error Log Action menu displays Clear Log.)

Printing Diagnostics

To print diagnostics information:

1. Display the diagnostics on the screen as described in this chapter.
2. On the Item menu, click Print to send the current screen to the active printer. (Specify the active printer with the Change Printer option on the Item menu.)